



187 series positive lock mark-II connector

1. Scope

1.1 Content

This specification covers the requirements for product performance, test methods and quality assurance provisions of 187 series positive lock mark-II connector. Applicable product description and part numbers are as shown in Appendix 1

2. Applicable Documents

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1 AMP Specifications :

- A. 109-5000: Test Specification, General Requirements for Test Methods
- B. 114-5041 : Application Specifications

3. Requirements

3.1 Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2 Material

- A. Contact : Pre-tinned Brass, Pre-tinned Phos-bronze
(P/N : 170324-X, 170325-X, 170326-X)
- B. Housing : 66 Nylon (UL94V-2)
66 Nylon (UL94V-0)

3.3 Ratings :

- A. Voltage: 250VAC
- B. Current: Refer to Fig. 2 for maximum allowable current to be applied.
- C. Temperature: -40 to 105 °C

3.4 Test Requirements and Procedures Summary



Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.5 Test Requirements and Procedures Summary

Test Description	Requirements	Procedures
Examination of product.	Meets requirements product drawing and AMP Spec 114-5120	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination Resistance (Low Level)	3mΩ Max(Initial) 6mΩ Max(Final)	Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA. Fig 4 AMP Spec:109-5311-1
Insulation Resistance	1000 mΩ Max(Initial) 100 mΩ Max(Final)	Impressed voltage 500VDC. Test between adjacent circuits of unmated connectors. Fig 5 AMP Spec 109-5302
Dielectric with standing voltage.	No creeping discharge nor flashover shall occur. Current Leakage : 1mA Max.	2kVAC for 1 min. Test between connector/earth of unmated connectors. Fig. 5 AMP Spec 109-5301
Temperature Rising	30°C maximum under loaded specified current or rating current.	Measure temperature rising by energized current. Fig. 2, 4 AMP Spec. 109-5310-1



Production Specification

108-61062
Rev. A

Test Description	Requirements	Procedures
MECHANICAL		
Crimp Tensile Strength	Wire Size Crimp Tensile	Apply an axial pull-off load to crimped wire of contact secured on the tester, Operation Speed : 100mm/min. AMP Spec, 109-5205 Condition B
	Wire size N(kgf)	
	0.2(mm ²) 24(Awg) 19.6(2)	
	0.3 22 49.0(5)	
	0.5 20 78.4(8)	
	0.75 18 117.6(12)	
	1.25 16 205.8(21)	
2.0 14 245.0(25)		
Contact Retention Force	49.0N (5 kgf) Min.	Apply an axial pull-off load to crimped wire. Operation Speed : 100mm/min. AMP Spec. 109-5212
Connector Mating Force	3Pos : 73.5N(7.5kgf) Max.	Operation Speed : 100mm/min. Measure the force required to mate connectors. AMP Spec. 109-5206, Condition B
Contact Locking Strength	Initial : 58.8N(6kgf) Min Final: 49.0N(5kgf)Min	Measure contact locking strength. Operation Speed : 100mm/min.
Vibration (Low Frequency)	No electrical discontinuity greater than 1 usec. Shall occur. 6mΩ Max (Final)	Subject mated connectors to 10-55-10Hz traversed in 1 minute at 1.52mm amplitude 2 hours each of 3 mutually perpendicular planes. 100mA applied AMP Spec 109-5201 Mounting : Fig. 6



Production Specification

108-61062
Rev. A

Test Description	Requirements	Procedures
ENVIRONMENTAL		
Humidity, Steady State	Insulation Resistance 100 mΩ Min.(Final) Termination Resistance 6 mΩ Max	Mated connector, 90-95% R.H . 40°C 96 hours AMP Spec 109-5105-1 Condition A
Thermal Shock	6 mΩ Max.(Final)	Subject terminal inserted into housing to 5 cycles between -40°C/30 min. and 105°C /30 min; AMP Spec 109-5103
Salt Spray	6mΩ Max (Final) 49.0N(5kgf) Min. : Contact Locking Strength	Subject mated connectors to 5% salt concentration for 96 hours: After the test, rinse the sample in water, sit it for one(1) hour for drying at room temperature. AMP Spec 109-5101 Condition B

Figure 1 (end)

Wire Size	Composition of Wire		Applicable JIS and JCS Specification	Current A(DC)
	Calculated Cross Section of Conductor mm ²	Number of Strands / Diameter of Strand N/Dia mm		
#24	0.22	11/0.16	UL1007	2.5
#22	0.31	12/0.18	JCS-246	3.0
#20	0.51	20/0.18	JIS-C-3406	5.0
#18	0.76	30/0.18	JIS-C-3316	7.0
#16	1.27	50/0.18	JIS-C-3316	12.0
#14	1.96	37/0.26	JIS-C-3316	15.0

Fig. 2

3.6 Product Qualification and Test Sequence

Test of Examination	Test Group (a)						
	1	2	3	4	5	6	
	Test Sequence (b)						
Examination of product					1	1	
Termination Resistance (Low Level)				4		2,4,6 8,10	
Dielectric withstanding voltage					5,8		
Insulation Resistance					4,7		
Temperature rising				1			
Vibration(Low Frequency)						3	
Contact Locking Strength			1				
Contact Retention Force		1					
Connector Mating Force					2		
Connector Unmating Force					3		
Crimp Tensile Strength	1						
Thermal Shock						7	
Humidity(Stead State)					6	5	
Salt Spray						9	

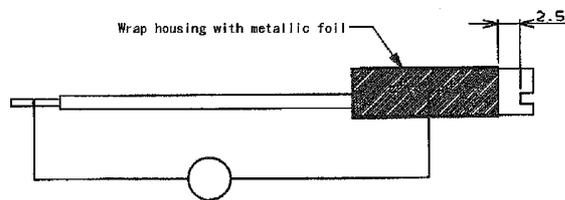
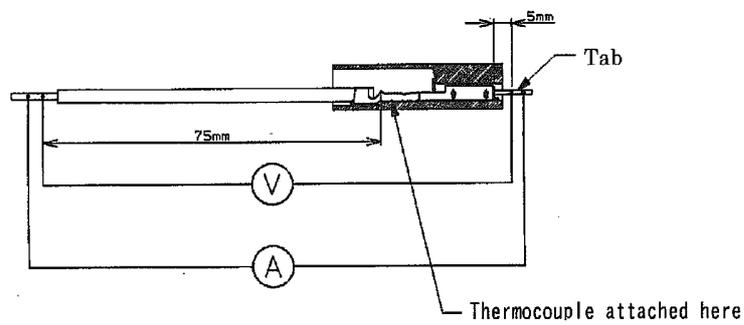
(a) Numbers indicate sequence in which the tests are performed

Figure 3

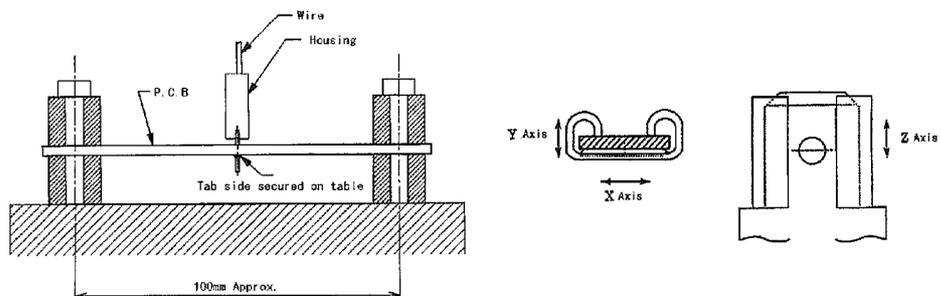
The applicable product description and part numbers are shown on Appendix 1

Product Part Number	Description	Remark
170324-X	187 Series Positives Lock Receptacle Contact	
170325-X	187 Series Positives Lock Receptacle Contact	
170326-X	187 Series Positives Lock Receptacle Contact	
x-1743068-x	187 Positive Lock 3P for Dryer	

Appendix 1



Measuring Apparatus
(Low Level)



6. Mating Tab Design

Tab contact for mating with “187”series positive Lock Contacts must be of the design specified in Fig 7.

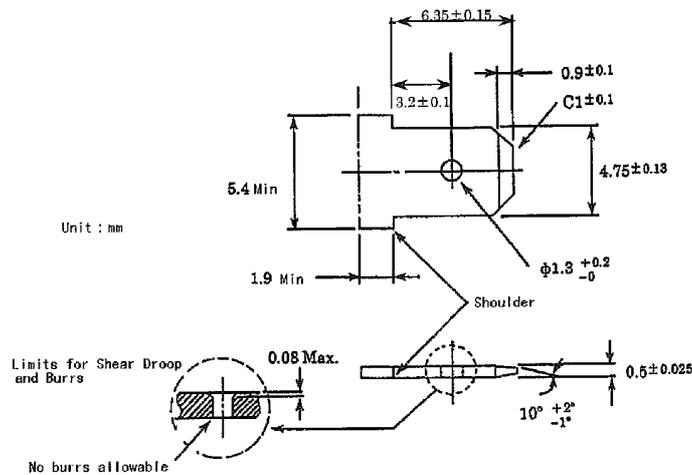


Fig 7

(Note) 1. Use 70/30 brass. Conforming to C2600P-1/2 hard of JIS H3100 for tab fabrication.

2. Plain metal must be used.

3. this tab design is applicable to the purpose of performance testing of tab. For the practical production purpose, refer to the following customer drawings prepared for recommendable tab design.



7. REVISION HISTORY

Current Revision	New Revision	Changes	Reason for Change	EC No.
-	A	-	-	-

8. SPECIFICATION APPROVAL

Prepared By	Checked By	Approved By
B.H. Cho	B.W. Kang	J.K. Song
Product Engineer	Senior Product Engineer	Product Engineering Manager